HIV in Racial and Ethnic Minority Populations

Introduction

Background

In the United States, the HIV epidemic disproportionately impacts racial and ethnic minority populations.[1] For all persons living with HIV, accessible, affordable, and effective antiretroviral therapy is critical for improving health and preventing transmission of HIV. In the United States, since 2010, national strategies and priorities for HIV have emphasized reducing HIV-related health disparities and inequities, as well as ensuring that all persons with HIV infection receive access to treatment and care that is nonstigmatizing and culturally competent.[2,3]

Clinician Awareness of HIV-Related Disparities

Multiple factors contribute to HIV-related disparities in the United States, including historical trauma, cultural differences, and socioeconomic inequalities. Clinicians working in the HIV field should be aware of these health disparities because they significantly impact clinical care. This Topic Review will address the epidemiology of HIV within racial and ethnic minority communities, highlight differences in engagement in care and HIV outcomes, explore key paradigms for understanding unique vulnerabilities to HIV among certain subpopulations, and investigate strategies to reduce HIV-related inequities in racial and ethnic minority populations.
Overview of HIV Epidemiology in Racial and Ethnic Minorities

Terminology for Epidemiology Data

The CDC generates extensive HIV surveillance data; the following definitions explain the different types of HIV surveillance data in the United States:

- **HIV Prevalence**: The HIV prevalence is the estimated number of persons living with HIV. This estimate includes persons living with diagnosed or undiagnosed HIV. Because the number of persons living with undiagnosed HIV is an estimate, the overall HIV prevalence is an estimate.

- **Diagnosed HIV**: The reporting for diagnosed HIV refers to persons living with a known HIV diagnosis, regardless of when the HIV diagnosis was made. Numbers of persons living with diagnosed HIV infection are reported numbers, not estimates.

- **New HIV Diagnoses**: New HIV diagnoses are persons who have been diagnosed with HIV during a fixed time period, typically one year. These individuals may have acquired HIV during that year or in years prior. Thus, new HIV diagnoses are not the same as new HIV infections (HIV incidence).

- **New HIV Infections (HIV Incidence)**: The HIV incidence represents the number of new infections that occurred during a fixed time period. Because many persons living with HIV are diagnosed years after their initial infection, the HIV incidence data is based on estimates performed by the CDC.

HIV Prevalence Estimates Based on Race/Ethnicity

The total number of persons living with HIV in the United States at a given time is the HIV prevalence in the United States. The estimated HIV prevalence in the United States takes into account the total number of persons living with diagnosed HIV infection plus the estimated number of persons living with HIV who have not been diagnosed. The following summarizes the Centers for Disease Control and Prevention (CDC) HIV prevalence estimates of persons living with HIV in the United States in 2015, by race/ethnicity.[4] Among persons aged 13 years and older living in the United States at year end 2015, approximately 42% were black/African American, 30% were white, 23% were Hispanic/Latino, and the remaining 5-6% were comprised of Asians, American Indians/Alaska Natives, Native Hawaiians/Other Pacific Islanders, or persons of multiple races (Figure 1).[4] These data underscore the disproportionate burden of HIV carried by minority populations within the United States, especially when considering that people of color comprise approximately 39% of the United States population but account for 70% of persons living with HIV.[4,5] Blacks/African Americans are the most disproportionately impacted, with an estimated HIV prevalence rate of 1,435 per 100,000 population at year end 2015, which is 7.3 times higher than in whites (Figure 2).[4]

HIV Incidence Estimates Based on Race/Ethnicity

The number of persons newly infected with HIV in the United States during a given time period (typically over 1 year) represents the HIV incidence. The following summarizes CDC 2015 HIV incidence estimates based on race/ethnicity. In 2015, among the 38,500 persons newly infected with HIV, 42% were black/African American, 27% white, 26% Hispanic/Latino, and the remaining 5% were Asians, American Indians/Alaska Natives, native Hawaiians/Other Pacific Islanders, and persons of multiple races (Figure 3).[4] The estimates for HIV incidence rates (new infections per 100,000 population) show that blacks/African Americans are the most disproportionately affected. The HIV incidence rate for blacks/African Americans was more than 8.3 times higher than for whites and 2.1 times higher than for Hispanics/Latinos (Figure 4).[4]

Projected Lifetime Risk of Acquiring HIV
The overall projected lifetime risk of being diagnosed with HIV in the United States for all persons is approximately 0.94-0.95% (or 1 in 106 persons); the risk varies significantly by sex and by racial/ethnic group ([Figure 5]).[6] For males, the lifetime risk of a diagnosis of HIV is 1 in 68, though the risk is much higher among black/African American men (1 in 22).[6] For females, the lifetime risk of a diagnosis of HIV is 1 in 250, with the highest risk occurring among black/African American females (1 in 54).[6] For all racial/ethnic groups of men who have sex with men (MSM), the lifetime risk of a diagnosis of HIV is very high (1 in 6 overall) ([Figure 6]).[6] The estimated lifetime risk for black/African American MSM is 1 in 2 (or 50% lifetime risk)—this is the highest of all ethnic/racial minority subpopulations and illustrates the dramatic disparities in HIV risk that must be addressed in the United States.
HIV Epidemiology Data by Racial and Ethnic Populations

HIV in Blacks/African Americans in the United States

The following summarizes key HIV epidemiologic features among blacks/African Americans in the United States.

- **Living with Diagnosed or Undiagnosed HIV (Prevalence):** At year end 2015, an estimated 468,800 blacks/African Americans were living with HIV (diagnosed and undiagnosed) in the United States; this corresponds to 41.8% of all persons living with HIV in the United States.[4] Among all black/African American persons living with HIV in 2015 in the United States, 15.1% were undiagnosed.[4] The HIV prevalence rate in blacks/African Americans was 1,435 (per 100,000 population), which was by far the highest among all racial/ethnic groups.[4] In 2015, among black/African American men living with HIV, 64% had male-male sex as their reported transmission risk, heterosexual contact was the most common reported transmission risk for black/African women living with HIV (82%).[4]

- **Living with Diagnosed HIV:** At year end 2015, a total of 405,857 blacks/African Americans were living with diagnosed HIV infection, including 266,377 males (65.6%), 137,998 females (34.0%), and 1,482 children (0.4%).[7] Approximately 62% of black/African American men living with diagnosed HIV had male-to-male sexual contact as their risk factor for HIV acquisition; heterosexual contact was the risk factor for 80% of black/African American women living with diagnosed HIV.[7]

- **New HIV Diagnoses:** Among the 39,782 persons newly diagnosed with HIV in 2016 in the United States, 17,528 (44.1%) were black/African American.[7] For blacks/African-Americans, the projected lifetime risk of being diagnosed with HIV is 1 in 54 for women, 1 in 22 for men, and 1 in 2 for MSM.[6]

- **New HIV Infections (Incidence):** In 2015, blacks/African Americans accounted for an estimated 16,200 (42.1%) of the 38,500 new HIV infections in the United States:[4] The HIV incidence rate (per 100,000 population) was 49.5, which was by far the highest among all racial and ethnic groups.[4] For blacks/African Americans newly infected with HIV in 2015, an estimated 80% of the men acquired HIV through male-male sex and 93% of the women acquired HIV through heterosexual contact.[4] The number of new HIV infections in the United States in blacks/African Americans declined during 2010-2015, from a high of 18,000 in 2010 to a low of 16,200 in 2015 (Figure 7).[4]

HIV in Whites in the United States

The following summarizes key HIV epidemiologic features among whites in the United States.

- **Living with Diagnosed or Undiagnosed HIV (Prevalence):** At year end 2015, an estimated 336,000 whites were living with HIV (diagnosed and undiagnosed) in the United States, which corresponds to 30.0% of all persons living with HIV in the United States.[4] Among all whites living with HIV in the United States, 11.9% were undiagnosed, which is the lowest undiagnosed fraction among all racial/ethnic groups.[4] The HIV prevalence rate (per 100,000 population) in whites was 196.7, which was the third lowest among all racial/ethnic groups and more than 7 times lower than the HIV prevalence rate in blacks/African Americans.[4]

- **Living with Diagnosed HIV:** At year end 2015, a total of 298,670 whites were living with diagnosed HIV infection, including 259,381 males (86.8%), 38,992 females (13.1%), and 297 children (0.1%).[7] Approximately 71% of white persons living with diagnosed HIV had male-to-male sexual contact as their risk factor for HIV acquisition.[7]

- **New HIV Diagnoses:** Among the 39,782 persons newly diagnosed with HIV in 2016 in the United States, 10,345 (26.0%) were white.[7] For whites, the projected lifetime risk of being diagnosed with HIV is 1 in 941 for women, 1 in 140 for men, and 1 in 11 for MSM.[6]
• **New HIV Infections (Incidence):** In 2015, whites accounted for an estimated 10,200 (26.5%) of the 38,500 new HIV infections in the United States.[4] The HIV incidence rate (per 100,000 population) was 6.0.[4] The number of new HIV infections in the United States in whites decreased between 2010 and 2015, with a high of 11,100 in 2010 and a low of 10,100 in 2014) (Figure 8).[4]

**HIV in Hispanics/Latinos in the United States**

The following summarizes key HIV epidemiologic features among Hispanics/Latinos in the United States.

• **Living with Diagnosed or Undiagnosed HIV (Prevalence):** At year end 2015, an estimated 252,400 Hispanic/Latino persons were living with HIV (diagnosed and undiagnosed) in the United States, which corresponds to 22.5% of all persons with HIV in the United States.[4] Among all Hispanic/Latino persons living with HIV in the United States, 16.5% were undiagnosed.[4] The HIV prevalence rate (per 100,000 population) in Hispanics/Latinos was 587.6, which was the second highest among all racial/ethnic groups.[4] For the year 2015, among Hispanics/Latinos living with HIV, 73% of the men had male-male sex as their reported transmission category and 77% of women had heterosexual contact as their reported transmission category.[4]

• **Living with Diagnosed HIV:** At year end 2015, a total of 213,736 Hispanic/Latino persons were living with diagnosed HIV infection, including 170,342 males (79.7%), 43,086 females (20.2%), and 308 children (0.1%).[7] Approximately 56% of Hispanics/Latinos living with diagnosed HIV had male-to-male sexual contact as their risk factor for HIV acquisition.[7]

• **New HIV Diagnoses:** Among the 39,782 persons newly diagnosed with HIV in 2016 in the United States, 9,766 (24.5%) were Hispanic/Latino.[7] For Hispanic/Latinos diagnosed with HIV in 2016, male-to-male sexual contact was the reported transmission category in 87% of the men and heterosexual contact was the reported category in 88% of the women.[7] For Hispanics/Latinos, the projected lifetime risk of being diagnosed with HIV is 1 in 227 for women, 1 in 48 for men, and 1 in 4 for MSM.[6]

• **New HIV Infections (Incidence):** In 2015, Hispanics/Latinos accounted for an estimated 10,000 (26.0%) of the 38,500 new HIV infections in the United States.[4] The HIV incidence rate (per 100,000 population) was 23.4, which was the second highest among all racial and ethnic groups.[4] The number of new HIV infections in the United States in Hispanics/Latinos during 2010 to 2015 ranged from 9,400 to 10,000) and overall showed a slight increase (Figure 9).[4]

**HIV in Asians in the United States**

The following summarizes key HIV epidemiologic features among Asians in the United States.

• **Living with Diagnosed or Undiagnosed HIV (Prevalence):** At year end 2015, an estimated 15,800 Asians were living with HIV (diagnosed and undiagnosed) in the United States, which corresponds to 1.4% of all persons with HIV in the United States.[4] Among all Asian persons living with HIV in the United States, 19.6% were undiagnosed.[4] The HIV prevalence rate (per 100,000 population) in Asians was 107.9, which was the lowest among all racial/ethnic groups.[4]

• **Living with Diagnosed HIV:** At year end 2015, a total of 12,887 Asians were living with diagnosed HIV infection, including 10,504 males (81.5%), 2,283 females (17.7%), and 100 children (0.8%).[7] Approximately 68% of Asians living with diagnosed HIV had male-to-male sexual contact as their risk factor for HIV acquisition.[7]

• **New HIV Diagnoses:** Among the 39,782 persons newly diagnosed with HIV in 2016 in the United States, 977 (2.5%) were Asian.[7] For Asians, the projected lifetime risk of being diagnosed with HIV is 1 in 943 for women, 1 in 176 for men, and 1 in 14 for MSM.[6]

• **New HIV Infections (Incidence):** In 2015, Asians accounted for an estimated 740 (1.9%) of
the 38,500 new HIV infections in the United States.\[4\] The HIV incidence rate (per 100,000 population) was 5.0, which was the lowest among all racial and ethnic groups.\[4\] The number of new HIV infections in the United States in Asians did not significantly change from 2010 to 2015 and the numbers were low (range 730 to 790) (Figure 10).\[4\]

HIV in Americans Indians/Alaska Natives in the United States

The following summarizes key HIV epidemiologic features among American Indians/Alaska Natives in the United States.

- **Living with Diagnosed or Undiagnosed HIV (Prevalence):** At year end 2015, an estimated 3,500 American Indians/Alaska Natives were living with HIV (diagnosed and undiagnosed) in the United States, which corresponds to 0.3% of all persons living with HIV in the United States.\[4\] Among those American Indian/Alaska Native persons living with HIV in the United States, 18.7% were undiagnosed.\[4\] The HIV prevalence rate (per 100,000 population) in American Indians/Alaska Natives was 183.8, which was the second lowest among all racial/ethnic groups.\[4\]

- **Living with Diagnosed HIV:** At year end 2015, a total of 2,904 American Indians/Alaska Natives were living with diagnosed HIV infection, including 2,136 males (73.6%), 760 females (26.1%), and 8 children (0.3%).\[7\] Approximately 50% of American Indian/Alaska Native persons living with diagnosed HIV had male-to-male sexual contact as their risk factor for HIV acquisition.

- **New HIV Diagnoses:** Among the 39,782 persons newly diagnosed with HIV in 2016 in the United States, 243 (0.6%) were American Indian/Alaska Native.\[7\] Of note, in recent years, approximately 25% of American Indians/Alaska Natives diagnosed with HIV infection have been women, a percentage second only to that of black women.\[8,9\] For American Indians/Alaska Natives, the projected lifetime risk of being diagnosed with HIV is 1 in 403 for women, 1 in 131 for men, and 1 in 12 for MSM.\[6\]

- **New HIV Infections (Incidence):** In 2015, American Indians/Alaska Natives accounted for an estimated 200 (0.5%) of the 38,500 new HIV infections in the United States.\[4\] The HIV incidence rate (per 100,000 population) was 10.2.\[4\] From 2010 to 2015, the number of new HIV infections in the United States among American Indians/Alaska Natives remained very low and did not significantly change (range 140 to 200) (Figure 11).\[4\]

HIV in Native Hawaiian/Pacific Islanders in the United States

The following summarizes key HIV epidemiologic features among Native Hawaiians/Pacific Islanders in the United States.

- **Living with Diagnosed or Undiagnosed HIV (Prevalence):** At year end 2015, an estimated 1,100 Native Hawaiians/Other Pacific Islanders were living with HIV (diagnosed and undiagnosed) in the United States, which corresponds to approximately 0.1% of all persons living with HIV in the United States.\[4\] Among all Native Hawaiians/Other Pacific Islanders living with HIV in the United States, 17.8% were undiagnosed.\[4\] The HIV prevalence rate (per 100,000 population) in Native Hawaiians/Other Pacific Islanders was 238.8.\[4\]

- **Living with Diagnosed HIV:** At year end 2015, a total of 891 Native Hawaiians/Other Pacific Islanders were living with diagnosed HIV infection, including 735 males (82.5%), 153 females (17.2%), and 3 children (0.3%).\[7\] Approximately 71% of Native Hawaiians/Other Pacific Islanders living with diagnosed HIV had male-to-male sexual contact as their risk factor for HIV acquisition.\[7\]

- **New HIV Diagnoses:** Among the 39,782 persons newly diagnosed with HIV in 2016 in the United States, 48 (0.1%) were Native Hawaiian/Other Pacific Islander.\[7\] For Native Hawaiians/Other Pacific Islanders, the projected lifetime risk of being diagnosed with HIV is 1 in 432 for women, 1 in 95 for men, and 1 in 8 for MSM.\[6\]

- **New HIV Infections (Incidence):** In 2011, Native Hawaiians/Other Pacific Islanders
accounted for an estimated 50 (0.1%) of the 40,900 new HIV infections in the United States; estimates for more recent years are not available, primarily because of the very low number of new infections in this group.\[4\] The HIV incidence rate (per 100,000 population) in 2011 was 13.0.\[4\]
Comparison of Racial/Ethnic Groups in the HIV Care Continuum

The HIV Care Continuum, which is also referred to as the HIV care cascade, represents the framework for providing medical care to persons living with HIV and involves five major steps: (1) diagnosis of HIV, (2) linkage to care, (3) engagement and retention in care, (4) prescription of antiretroviral therapy, and (5) achievement of virologic suppression.\[10,11\] Significant disparities exist along the continuum of HIV care for racial and ethnic minorities as discussed below.\[4,12,13,14\]

HIV Testing and Diagnosis

Screening for HIV infection and diagnostic testing is a crucial step in the HIV Care Continuum, but testing rates continue to be suboptimal, particularly among some subpopulations most at risk for HIV acquisition. In the United States, 2015 data showed that the proportion of persons living with undiagnosed HIV decreased to less than 20% in all racial/ethnic groups, with a range of 11.9% in whites to 19.6% in Asians (Figure 12).\[4\] Although the proportion of persons with diagnosed HIV has increased in recent years across racial and ethnic groups, the fraction of those who have been diagnosed in all groups falls short of the national benchmark goal to have at least 90% of persons living with HIV become aware of their HIV serostatus.\[2\] In 2016, fewer than 25% of persons in all racial/ethnic groups had stage 3 AIDS at the time of HIV diagnosis (Figure 13).\[15\] Potential barriers to HIV testing in racial/ethnic minorities include lack of convenient and culturally/linguistically sensitive testing locations, stigma, poverty, and low access to healthcare providers who recommend HIV testing.\[16,17\] For undocumented immigrants, lack of health insurance and fear of deportation present additional barriers to testing.\[18\] A low perception of HIV risk also serves as an impediment to testing, especially among minority women.\[19,20\] Use of social media, street-based peer outreach, and community health worker programs have all shown promise in reducing HIV stigma and promoting higher HIV testing rates.\[17\]

Linkage to Care

National priorities have established the benchmark for successful linkage to care as the completion of a visit with an HIV medical provider within 1 month of HIV diagnosis.\[2\] Recent CDC surveillance reports provide data for two timeframes for linkage to care: within 1 month (30 days) and within 3 months (90 days) of HIV diagnosis.\[21,22\] Data from the HIV National Surveillance System for individuals newly diagnosed with HIV in 2015 show that linkage to HIV medical care within 1 month of HIV diagnosis occurred in more than 70% of persons in all racial/ethnic groups; the lowest rate was in blacks (72.1%) and the highest in persons of multiple races (81.0%) (Figure 14).\[15\] When using the less stringent 3-month parameter for linkage to HIV medical care, all racial/ethnic groups had linkage rates greater than 80% (Figure 15).\[15\] Although rates of linkage to care have improved, they still fall short (in all racial/ethnic groups) of the federal benchmark goal of at least 85% of persons linked to HIV medical care within 30 days of HIV diagnosis.\[2,22\]

Engagement and Retention in HIV Medical Care

The CDC 2015 surveillance data reported rates of receipt of any medical care (indicated by at least one CD4 cell count or HIV RNA measurement during the year) and retention in care (at least 2 CD4 or HIV RNA tests obtained at least 3 months apart during 2015); these two definitions are distinct—retention in care reflects ongoing engagement in medical care whereas receipt of any medical care does not necessarily translate to ongoing care.\[15\] In 2015, among different racial/ethnic groups, rates for receipt of any HIV medical care ranged from 69.2 to 85.7% (Figure 16) and rates for retention in HIV care ranged from 49.4% to 67.7% (Figure 17).\[22\] In 2016, the CDC reported multi-year data for retention in care from 11 states and the District of Columbia that included persons diagnosed with HIV in 2010 and still alive in 2013.\[23\] In this study, persons retained in care for all 3 years (2011, 2012, 2013) were considered to be consistently retained in
care. A lower proportion of blacks/African Americans were consistently retained in care during 2011 through 2013 (38%) compared to Hispanics/Latinos (50%) or whites (49%); these discrepancies persisted when stratified by sex and transmission category.\[23\] Overall, blacks/African Americans also had the highest rate (28%) of not being retained in care at all during the 3-year study period compared to Hispanics/Latinos (23%) and whites (19%).\[23\]

**Prescription of Antiretroviral Therapy**

Several studies have evaluated differences in antiretroviral prescribing patterns for persons with HIV based on racial/ethnic differences. Studies conducted early in the HIV epidemic found that blacks were less likely to receive antiretroviral therapy compared with patients of other races.\[24,25\] Over time, disparities in antiretroviral prescribing patterns have lessened.\[26\] Data from the National HIV Surveillance System and Medical Monitoring Project found that among HIV-diagnosed persons retained in care in 2009, a higher percentage of whites were receiving antiretroviral therapy than blacks/African Americans or Hispanics/Latinos, although these differences were not statistically significant.\[13\] Data from the same two surveillance systems in 2010 found that 46.2% of HIV-diagnosed blacks/African Americans and 44.4% of Hispanics/Latinos were receiving antiretroviral therapy; these reports did not measure the percentage of whites receiving antiretroviral therapy so direct comparisons cannot be made.\[12,14\]

**Suppression of HIV RNA Levels**

The achievement of plasma HIV RNA suppression is the final step in the HIV Care Continuum and it represents a critical outcome measure. In the 2016 CDC HIV surveillance report, the rates of virologic suppression are based on all persons living with HIV (at the surveillance year end). Among persons who had at least 1 HIV RNA level checked in 2015, the percentage with an HIV RNA less than 200 copies/mL ranged from a low of 79.8% in blacks/African Americans to a high of 93.3% in Asians (Figure 18).\[15,22\] Data from 5 AIDS Clinical Trials Group studies that included 2,495 individuals (1,151 blacks/African Americans and 1,344 whites) showed a 40% higher virologic failure in blacks/African Americans than in whites and this trend was seen with multiple different antiretroviral regimens.\[27\] The federal benchmark goal in the HIV Care Continuum is to have virologic suppression in at least 80% of persons diagnosed with HIV.\[2\] Although persons engaged in HIV care have overall high rates of virologic suppression, the rates of virologic suppression among all persons diagnosed with HIV is well below the federal benchmark virologic suppression goal in all racial/ethnic groups; this is due to falloffs that occur at multiple steps in the HIV Care Continuum, particularly the large drop at the retention in care step.\[15\]
Health Outcomes and Death

In 2015 CDC surveillance data, the population HIV death rate (deaths related to HIV per 100,000 population) was highest among blacks/African Americans and 7-fold higher than among whites (17.5 versus 2.5 deaths per 100,000 population) (Figure 19).[22] In earlier CDC estimates from 2012, the death rate for blacks/African Americans living with HIV was 13% higher than the rate for whites and 47% higher than for Hispanics/Latinos.[13,28] The differences in HIV-related death rates between different ethnic/racial groups are not entirely explained by the lower proportion of persons achieving HIV RNA suppression.[29] Retrospective analyses of hospital and insurance records have also found that blacks/African Americans living with HIV are approximately six times more likely than whites with HIV to require hospitalization.[30] Mortality differences exist across other ethnic groups as well. A study comparing mortality from 1999 to 2009 between whites and American Indians/Alaska Natives found that American Indians/Alaska Natives had significantly higher HIV-related death rates.[31]
Factors Associated with Health Inequities

Several paradigms for understanding the unique vulnerability to HIV in racial and ethnic minority populations have been proposed. This section will explore multiple potential factors that help to explain how significant racial/ethnic disparities have occurred in the HIV epidemic in the United States.

**Syndemic Theory**

Syndemic refers to two or more factors that interact in a synergistic manner and result in an excess burden of disease that exceeds the contribution of either factor alone.\[32\] In syndemic theory, social determinants of health are integral to any explanation of high HIV rates in minority communities. Syndemic theory posits that the intersection of HIV, substance abuse, trauma, poverty, and incarceration are responsible for the disproportionate burden of HIV in minority populations, particularly in blacks/African Americans and Hispanics/Latinos.\[32\] For example, blacks/African Americans and Hispanics/Latinos living in poverty are more likely to experiment with injection drug use in adolescence or resort to sex work, both of which increase vulnerability to HIV acquisition. Similarly, high rates of drug use and violence lead to higher incarceration rates, which destabilize families and disrupt stable sexual partnerships, further increasing vulnerability to HIV. Disparities in sentencing for drug-related crimes reinforce the syndemic, given the disproportionately large numbers of young black/African American males who have been incarcerated for drug offenses.\[33\] The relationships are reciprocal and synergistic, such that incarceration can lead to unemployment and poverty, and poverty can lead to increased drug use and sexual risk taking, and these risk behaviors can lead to HIV and poor health.

**Risk Environmental Model**

The “Risk Environmental Model” proposes that racial and ethnic disparities in HIV infection arise because minority groups more often live in an environment that creates vulnerability to adverse HIV-related outcomes.\[34\] The “environment” in this model refers to social, economic, political, and physical influences that interact to increase an individual’s vulnerability to HIV infection. In 2009, the National HIV Behavioral Surveillance Study Group conducted a study of more than 9,170 persons who inject drugs in 19 metropolitan statistical areas in the United States and found that blacks/African Americans who inject drugs were more likely than whites who inject drugs to live in areas with higher poverty, higher violent crime rates, and lower access to substance abuse treatment and sterile syringe services. In addition, both blacks/African Americans and Hispanics/Latinos were more likely to live in areas with high rates of drug-related arrests as compared to whites.\[34\] This study illustrates that racial/ethnic residential segregation may limit access to HIV prevention and treatment services, thus perpetuating HIV transmission.

**Minority Stress Theory**

The minority stress theory proposes that health disparities among populations can be explained by stressors caused by stigma and external prejudice. Extensive social science research has correlated the experience of racial discrimination with adverse health outcomes in relation to cardiovascular disease, mental health, substance use disorders, and HIV infection.\[35,36,37,38\] Several studies suggest that minority stress and racial discrimination can contribute to increased rates of depression, substance use disorders, and sexual behaviors that increase the risk of HIV acquisition (e.g. condomless sex and sex with multiple partners) among both heterosexuals and MSM.\[35,39\] The magnitude of the racism does not need to be great, and even small, daily, incremental experiences of racism are linked to increased risk-taking behavior as a coping mechanism.\[35,40\] Ethnic and racial minorities who also experience sexual-orientation-based discrimination—for example, black/African American MSM—may face a double burden of discrimination due to “dual minority status.”\[40,41\] Ethnographic research has identified that discrimination based on sexual
orientation increases HIV acquisition risk behavior similar to the increased risk seen with racial/ethnic discrimination.[41]

**Sexual Networks and Concurrency**

Risk for HIV acquisition is mediated not only by traditional sexual risk factors, such as condomless intercourse, sex with multiple partners, or sex under the influence of alcohol or drugs, but also by sexual networks and patterns of relationships that are integrated into community structures. Concurrent sexual partnerships, defined as sexual relationships that overlap in time, have been identified as a driving factor in the HIV epidemic.[42] Concurrent partnerships may lead to faster spread of HIV than sequential (serial monogamous) partnerships, especially in concurrent situations where both partners are non-monogamous.[42, 43] Concurrency may be an especially important factor in HIV transmission for black/African American women.[42] One study of more than 7,000 women in the 2002 Survey of Family Growth found that black/African American women were twice as likely as white or Hispanic/Latino women to have concurrent partners. Several factors contribute to this, including low male-to-female gender ratios (owing in part to high rates of incarceration of black/African American males) and substance use.[42] Concurrency has also been found in association with high-risk sexual behaviors, including exchange sex (for money or drugs) and sex with a partner who uses injection drugs.[44] Because the prevalence of HIV among blacks/African Americans is higher than it is among whites, concurrency among high- and low-risk groups leads to significantly greater risk of HIV acquisition for blacks/African Americans, since the per-act probability of contracting HIV infection is higher.[45]

**Incarceration**

In order to understand the theory that incarceration increases the vulnerability of minority populations to HIV infection, it is important to recognize the overlapping epidemics of incarceration and HIV, particularly for low-income people of color.[46] In 2012, blacks/African Americans and Hispanics/Latinos together comprised approximately 30% of the United States population but 58% of the United States prison population.[47] Disparities in drug-related arrests, as well as drug sentencing, are major contributors to the racial disparities in incarceration.[33] Similar findings exist among persons with HIV who are incarcerated. In one study that included 1,233 men and women living with HIV who entered jail at 10 sites, 65% of subjects self-identified as black and 25% as Hispanic.[46] Incarceration directly and indirectly contributes to racial and ethnic disparities related to HIV acquisition risk. High rates of incarceration among black men, for example, lead to a scarcity of male sexual partners in black communities; the resulting imbalanced sex ratio has been shown to increase the likelihood that the remaining black men will have multiple female sex partners (and multiple concurrent partnerships).[48] Incarceration also disrupts primary intimate partnerships and men with incarceration histories have higher rates of multiple sex partners, concurrent partners, unprotected sex, and illicit drug use.[49, 50, 51] Young people in communities with high rates of violence and incarceration also suffer from a lack of role models and are more likely to engage in criminal behaviors. Adolescents with a history of incarceration have increased rates of HIV risk behaviors, including substance use during sex, condomless sex, and multiple partners.[52, 53]

**Historical Trauma Theory and Social Victimization**

Racial and ethnic segregation, disproportionate incarceration rates in minority communities, and a history of unethical treatment of persons of color have all created mistrust of societal institutions, including the health care system. Efforts to address HIV prevention and treatment in communities that experience historical trauma may fall short unless the factors underlying mistrust and loss are adequately addressed.

- **Blacks/African Americans**: The Tuskegee experiment is perhaps the most infamous among missteps and abuses in medical research. In this study, curative treatment for syphilis was
deliberately withheld from 399 black/African American men so that that natural history of the disease could be studied.[54] Although the Tuskegee study deepened mistrust of the medical system among blacks/African Americans, mistrust is rooted in practices of medical experimentation and abuse during decades of slavery and then by unequal medical care in the post-Civil War era.[54] At the start of the HIV epidemic in the United States, some blacks/African Americans refused treatment due to fears of medical experimentation and some expressed fears that HIV was a form of genocide. Some blacks/African Americans continue to subscribe to HIV conspiracy theories.[54,55,56] Ongoing experiences of racism and health care system inequities may contribute to underutilization of health care services and complicate public health efforts to engage blacks/African Americans in HIV prevention and care.[57,58]

- **Hispanics/Latinos**: Social marginalization contributes to the reluctance of Hispanic/Latino populations to seek HIV-related services.[59] One study of 190 sexual and gender minority Hispanic/Latinos in North Carolina found that avoidance of HIV testing was often due to fear of disclosure and repercussions of a positive test, such as fear the test result would be reported to the government.[60] In addition, reluctance to participate in HIV care may arise among undocumented immigrants who face concerns for deportation.[59]

- **American Indians/Alaska Natives**: Historical trauma theory can help to explain HIV vulnerabilities among other minority populations. For example, mistrust of the medical establishment as well as HIV denialism is common among Native populations within the United States, with some believing that white people intentionally spread HIV among Native peoples.[61,62] One study of Native Americans living on the Fort Peck Reservation in Montana found that a particular type of intergenerational trauma designated as “Historical Loss” (from loss of language, land, and traditional spiritual and cultural identity) is linked to psychological symptoms and an increased likelihood of sex with multiple concurrent partners.[63]
Future Directions for Reducing HIV-Related Disparities

Reducing HIV-related disparities in racial/ethnic minorities will require a coordinated, multidisciplinary approach that addresses the social and structural drivers of HIV infection (poverty, unemployment, geographic segregation, incarceration, and differential access to health care) and that can be tailored to meet specific local and cultural needs.[45]

Use of Community Partnerships

Philadelphia’s citywide faith-based HIV prevention campaign, initiated in 2010, provides one example of how a community partnership was successfully created to help achieve national benchmark HIV care continuum goals.[64] The campaign attracted a coalition of faith-based organizations, academic institutions, private and public sector players, and the media in order to promote HIV testing, awareness, and prevention; faith-based organizations played a particularly important role with blacks/African Americans.[64] This campaign demonstrated that community-based advocacy is effective in increasing dialogue around HIV that can translate into public health action.[65]

Increasing Numbers of Racial/Ethnic Minorities in HIV Workforce

Patient-provider racial concordance has been shown to improve the rates of testing for sexually transmitted diseases among black/African American women attending sexually transmitted diseases clinics, and both racial and language concordance has been associated with improved rates of medication adherence.[66,67] Early studies also suggested that racial concordance between persons with HIV and their medical providers reduced the time to receipt of antiretroviral therapy.[68] Ongoing efforts for HIV workforce development can play an important role in reducing disparities in HIV medical care. In particular, training more minority clinicians who can provide HIV medical services may help improve engagement in care of minority patients living with HIV. Regardless of racial/ethnic concordance or discordance, the level of trust between patient and provider remains paramount, thus reinforcing the need to have a culturally competent HIV workforce.[69]

Early Engagement in Care

Available evidence suggests that focusing on early engagement in HIV care may yield the greatest returns in terms of improving racial and ethnic disparities in the HIV cascade. Retention in the first year after HIV diagnosis predicts future patterns of engagement—most individuals who engage in care during the first year remain in care. At the retention step of the HIV Care Continuum, major disparities among racial and ethnic groups emerge.[23] More resources should be directed at ensuring that persons who are diagnosed with HIV are immediately linked to HIV care upon HIV diagnosis and that they receive convenient and culturally sensitive medical care. These efforts should also include strategies and infrastructure to maximize their retention in HIV care.

Addressing Needs of Undocumented Immigrants

It is crucial to address the challenges of meeting the health care needs for undocumented immigrants living with HIV infection in the United States. The Affordable Care Act reduced disparities in insurance coverage rates by race and ethnicity, but did not extend insurance coverage to undocumented immigrants. Typically undocumented immigrants qualify only for emergency services and pregnancy-related services, which makes it very difficult to access medical care for HIV testing, prevention, and treatment.[70] For undocumented individuals, the barrier created by lack of insurance is compounded by others, including lack of knowledge about the healthcare system, fear of deportation, oppressive work environments, and social isolation.[71] Given the public health implications of excluding an entire subpopulation from access to HIV services, including antiretroviral therapy, it is imperative that the treatment cascade be improved for undocumented immigrants, as for other ethnic and racial minorities.
Summary Points

- In the United States, a disproportionate burden of HIV is carried by racial/ethnic minority populations; people of color comprise approximately 38% of the total United States population but account for approximately 68% of persons living with HIV infection.
- One of the three main HIV-related federal benchmark goals is to reduce HIV-related health disparities and inequities.
- Racial/ethnic minority groups have persistently lower rates of knowledge of their HIV status compared to whites.
- The starkest discrepancies along the HIV Care Continuum occur at the retention in care step, with only 38% of blacks/African Americans retained in care in 2013 compared with 49% of whites and 50% of Hispanics/Latinos.
- Several paradigms for understanding the unique vulnerability to HIV in racial and ethnic minority populations have been proposed, including syndemic theory, the risk environmental model, minority stress theory, historical trauma theory, and other paradigms that emphasize the impact of sexual networks and incarceration on HIV risk.
- Reducing disparities in HIV infection and improving outcomes in racial and ethnic minorities will require a coordinated, multidisciplinary approach.
- HIV workforce development should focus on recruitment of more minority healthcare providers as well as on improving cultural competency.
Citations


33. National Association for the Advancement of Colored People (NAACP). Criminal Justice Fact Sheet. [NAACP]


47. Sentencing Project. New incarceration figures: Growth in population continues. [The Sentencing Project] -


69. Sohler NL, Wong MD, Cunningham WE, Cabral H, Drainoni ML, Cunningham CO. Type and pattern of illicit drug use and access to health care services for HIV-infected people. AIDS Patient Care STDs. 2007;21 Suppl 1:S68-76. [PubMed Abstract]


References


• Families Against Mandatory Minimums.
  [Families Against Mandatory Minimums] -

  [PubMed Abstract] -

  [PubMed Abstract] -

  [PubMed Abstract] -

  [PubMed Abstract] -

  [CROI] -

  [PubMed Abstract] -

  [PubMed Abstract] -

  [PubMed Abstract] -

  [PubMed Abstract] -

  [PubMed Abstract] -

  [PubMed Abstract] -


Figures

Figure 1 Estimated HIV Prevalence in United States, by Race/Ethnicity, 2015

These estimates are for persons aged 13 years and older living with diagnosed and undiagnosed HIV infection in the United States at year-end 2015. The total includes persons with HIV infection whose risk factor was not reported or identified.


<table>
<thead>
<tr>
<th>Racial/Ethnic Group</th>
<th>Estimated HIV Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>3,500</td>
</tr>
<tr>
<td>Asian</td>
<td>15,800</td>
</tr>
<tr>
<td>Black/African American</td>
<td>468,800</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>252,400</td>
</tr>
<tr>
<td>Native Hawaiian/Other Pacific Islander</td>
<td>1,100</td>
</tr>
<tr>
<td>White</td>
<td>336,800</td>
</tr>
<tr>
<td>Multiple Races</td>
<td>43,500</td>
</tr>
<tr>
<td>Total</td>
<td>1,121,900</td>
</tr>
</tbody>
</table>
Figure 2 Estimated HIV Prevalence Rate in United States, by Race/Ethnicity, 2015

These estimates are for persons aged 13 years and older living with diagnosed and undiagnosed HIV infection in the United States at year end 2015.

Figure 3 Estimated HIV Incidence in United States, by Race/Ethnicity, 2015

These estimates are for persons aged 13 years and older living with diagnosed and undiagnosed HIV infection in the United States at year-end 2015.


<table>
<thead>
<tr>
<th>Racial/Ethnic Group</th>
<th>New HIV Infections</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian/Alaska Native</td>
<td>200</td>
<td>0.5</td>
</tr>
<tr>
<td>Asian</td>
<td>740</td>
<td>1.9</td>
</tr>
<tr>
<td>Black/African American</td>
<td>16,200</td>
<td>42.1</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>10,000</td>
<td>26.0</td>
</tr>
<tr>
<td>Native Hawaiian/Other Pacific Islander</td>
<td>60</td>
<td>0.2</td>
</tr>
<tr>
<td>White</td>
<td>10,200</td>
<td>26.5</td>
</tr>
<tr>
<td>Person of Multiple Races</td>
<td>1,100</td>
<td>2.9</td>
</tr>
<tr>
<td>Total / Average Rate</td>
<td>38,500</td>
<td>100</td>
</tr>
</tbody>
</table>
Figure 4 Estimated HIV Incidence Rate in United States, by Race/Ethnicity, 2015

These estimates are for persons aged 13 years and older living with diagnosed and undiagnosed HIV infection in the United States at year-end 2015.

Figure 5 Lifetime Risk of HIV Diagnosis in Males and Females, by Race/Ethnicity

The numbers shown in this table represent the probability as "one in n" persons who will be diagnosed with HIV during their lifetime.


<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Racial/Ethnic Groups</td>
<td>1 in 68</td>
<td>1 in 253</td>
</tr>
<tr>
<td>Black/African American</td>
<td>1 in 22</td>
<td>1 in 54</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>1 in 51</td>
<td>1 in 256</td>
</tr>
<tr>
<td>Native Hawaiian/Pacific Islander</td>
<td>1 in 95</td>
<td>1 in 403</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>1 in 131</td>
<td>1 in 432</td>
</tr>
<tr>
<td>White</td>
<td>1 in 140</td>
<td>1 in 941</td>
</tr>
<tr>
<td>Asian</td>
<td>1 in 176</td>
<td>1 in 943</td>
</tr>
</tbody>
</table>
**Figure 6 Lifetime Risk of HIV Diagnosis in Men who have Sex with Men, by Race/Ethnicity**

The numbers shown in this table represent the probability as "one in n" persons who will be diagnosed with HIV during their lifetime.


<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>Men who have Sex with Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Racial/Ethnic Groups</td>
<td>1 in 6</td>
</tr>
<tr>
<td>Black/African American</td>
<td>1 in 2</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>1 in 5</td>
</tr>
<tr>
<td>Native Hawaiian/Pacific Islander</td>
<td>1 in 8</td>
</tr>
<tr>
<td>White</td>
<td>1 in 11</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>1 in 12</td>
</tr>
<tr>
<td>Asian</td>
<td>1 in 14</td>
</tr>
</tbody>
</table>
Figure 7 Estimated HIV Incidence for Blacks/African Americans in United States, 2010-2015

Figure 8 Estimated HIV Incidence for Whites in United States, 2010-2015

Figure 9 Estimated HIV Incidence for Hispanics/Latinos in United States, 2010-2015

Figure 10 Estimated HIV Incidence for Asians in United States, 2010-2015

Figure 11 Estimated HIV Incidence for American Indians/Alaska Natives in United States, 2010-2015

Figure 12 Persons with Undiagnosed HIV in United States, by Race/Ethnicity, 2015

Figure 13 Stage 3 (AIDS) at Time of HIV Diagnosis in United States, by Race/Ethnicity, 2016

Figure 14 Linkage to HIV Medical Care within 1 Month after HIV Diagnosis (≥1 CD4 or Viral Load Test), by Race/Ethnicity, United States 2016

Linkage to care within 1 month after HIV diagnosis was defined by at least 1 CD4 cell count or HIV RNA level within 1 month of diagnosis. These data are from 39 States and the District of Columbia.

Linkage to care within 3 months after HIV diagnosis was defined by at least 1 CD4 cell count or HIV RNA level within 3 months of diagnosis. These data are from 39 States and the District of Columbia.

Figure 16 Receipt of Any HIV Medical Care (≥1 CD4 or HIV RNA Test), by Race/Ethnicity, United States 2015

These data are from 39 States and the District of Columbia.

Figure 17 Retention in HIV Medical Care (≥2 CD4 or HIV RNA Test at least 3 months apart during 2015), by Race/Ethnicity, United States 2015

These data are from 39 States and the District of Columbia.

**Figure 18 HIV RNA Less than 200 Copies/mL (among persons with at Least 1 Viral Load Test) 2015, by Race/Ethnicity, United States 2015**

Data represents the percentage of all persons alive with HIV at year-end 2015 who had at least 1 viral load test obtained during 2015 and whose viral load was less than 200 copies/mL. Viral suppression was defined as HIV RNA less than 200 copies/mL at the most recent HIV RNA level tested in 2015. These data are from 39 States and the District of Columbia.

Figure 19 Death Rates of Persons with Diagnosed HIV Infection in United States, by Race/Ethnicity, 2015

These data are from 39 States and the District of Columbia.